

THREEFLOWER TICKTREFOIL

Desmodium triflorum (L.) DC.

Plant Symbol = DETR4

Contributed by: USDA NRCS National Plant Data Center



Forest & Kim Starr
@ Pacific Island Ecosystems at Risk

Alternate Names

Meibomia triflora, *Sagotia triflora*, threeflower beggerweed, creeping tick trefoil, tropical trefoil, atiponna, kuddalia, amor-do-campo, hierba cuartillo

Uses

Erosion control: Hydraulic roughness is a measure of a plants ability to control rill erosion. Threeflower ticktrefoil exhibited significantly greater ($P < 0.05$) hydraulic roughness than either star grass (*Dactyloctenium aegyptium*) or stubborn grass (*Sporobolus pyramidalis*) when planted in vegetated waterways in Nigeria. Ogunlela & Makanjuola (2000) describe threeflower ticktrefoil as a creeper and star grass and stubborn grass as bunch grasses. Threeflower ticktrefoil's hydraulic roughness was approximately 1.6 times greater than the average of star grass and stubborn grass. The stem height of threeflower ticktrefoil was approximately 1.3 in. and the average of the bunch grasses 9.0 in. The plants with the greater stem height would have been expected to possess higher water retardant values. The converse was observed, which suggests that stem height is important in intercepting raindrop impact while vegetal density is more important for retarding surface flows.

Weed control: Dried chopped leaves of 4 allelopathic plant species were evaluated for their effect on weed emergence in paddy soil in a greenhouse and in a rice field in Vietnam (Hong, Xuan, Tsuzuki, Terano, Matsuo, & Khanh, 2004). These 4 four species were harlequin glorybower (*Clerodendrum trichotomum*), jimsonweed (*Datura stramonium*), Chinaberry (*Melia azedarach*) and threeflower ticktrefoil. In the greenhouse experiment, jimsonweed, threeflower ticktrefoil and Chinaberrytree exhibited similar levels of weed inhibition, more than 90% control, when applied at 0.45 tons of dried leaves per acre. Harlequin glorybower leaves achieved about 70% weed reduction when applied at 0.9 tons per acre. In a paddy rice field, threeflower ticktrefoil leaves applied at 9.0 tons per acre produced the highest level of weed control and rice yield of all the treatments; the treatments included a commercial herbicide for rice. The threeflower ticktrefoil treatment had 94% less weed dry weight and 28% more rice yield than the no leaves applied control; differences between control and the threeflower ticktrefoil treatment were significant ($P < 0.05$).

Several ground covers were evaluated as live mulch in maize production in a series of experiments in Nigeria (Akobundu & Okigbo, 1984). Maize planted into threeflower ticktrefoil ground cover exhibited shorter height and lower grain yield ($P < 0.05$) than maize in plots treated with paraquat herbicide and maize stover applied to the soil surface prior to maize planting. Weed infestation was heaviest in the broadleaf carpetgrass (*Axonopus compressus*), threeflower ticktrefoil and trailing indigo (*Indigofera spicata*) ground cover treatments; moderate in the *Arachis repens* treatment; and very low in the flor de conchitas (*Centrosema pubescens*) and psophocarpus (*Psophocarpus palustris*) treatments. Weed competition was minimized and good maize yield obtained with both the flor de conchitas and psophocarpus legume ground covers and proper ground cover management. The authors conclude that legume ground covers can suppress weeds and protect tropical soils.

Cover crop: The NRCS Field Office Technical Guide for Hawaii recommends threeflower ticktrefoil as a cover crop for perennial crops such as orchard trees. The University of Hawaii recommends broadleaf carpetgrass as a cover crop in macadamia, coffee, coconut, oil palm and rubber orchards. Threeflower

ticktrefoil combines well with broadleaf carpet grass in an orchard cover crop.

In a coconut plantation in the Solomon Islands, replacement of the mat forming golden false beardgrass (*Chrysopogon aciculatus*) with threeflower ticktrefoil as the cover crop increased copra yield from 747 to 1,956 tons per acre. The plantation managers used cultivation to replace the golden false beardgrass with threeflower ticktrefoil. The authors suggest that the increase in copra yield was due to three factors: nitrogen fixation by threeflower ticktrefoil, less competition from the threeflower ticktrefoil, soil aeration and nutrient release from the cultivation, or a combination of all three.

Silvopasture: Threeflower ticktrefoil is frequently a part of the pasture component of coconut-pasture, rubber-pasture and oil palm-pasture silvopasture systems. Threeflower ticktrefoil is naturalized in many of the coconut growing areas. Threeflower ticktrefoil exhibits prostrate growth and low forage yield. But, it is palatable to livestock, persistent under heavy grazing and tolerant to moderate shade. Reports indicate that threeflower ticktrefoil is a successful legume when intercropped with the following grasses: broadleaf carpetgrass, palisade signalgrass (*Urochloa brizantha*), hilograss (*Paspalum conjugatum*) and St. Augustine grass (*Stenotaphrum secundatum*).

Human consumption: Tribal people in southern India consume threeflower ticktrefoil as a green.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Weediness

Threeflower ticktrefoil is listed as an invasive species by the Plant Conservation Alliance: Alien Plant Working Group. The USDA-FS Pacific Islands Ecosystems at Risk project indicates that threeflower ticktrefoil is present in the Pacific Islands, but does not class it as invasive.

Threeflower ticktrefoil plant may become weedy or invasive in some regions or habitats and may displace desirable vegetation if not properly managed. Please consult with your local NRCS Field Office, Cooperative Extension Service office, or state natural resource or agriculture department regarding its

status and use. Weed information is also available from the PLANTS Web site at plants.usda.gov.

Description

General: Threeflower ticktrefoil as described by B.C. Stone (1970) is a "Creeping herb; much-branched, somewhat mat-forming; leaves of 3 leaflets, the lower leaves sometimes unifoliate; leaflets obovate, to obcordate, rounded and emarginate at tip, mostly less than 1 cm long, up to 9 mm wide, sometimes with 2 white marks; flowers few in fascicles, opposite leaves, pedicels 3-8 mm long, lengthening in fruit to just over 1 cm; puberulent; corolla reddish-violet or pale pink, standard obovate, 4-5 mm long; pods up to 17 mm long, about 2.3 mm broad, 3-7-jointed, indehiscent."

Distribution: Threeflower ticktrefoil is native to the Old World tropics and subtropics. Currently, it is pantropical, extending northward to Florida. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Threeflower ticktrefoil's habitat is described by A.C. Smith, W.L. Wagner and W.A. Whistler. In Hawai'i, it is "naturalized and common in dry, disturbed sites near the coast and on dry slopes and lava flows, also in lawns, pastures, waste places and along roadsides, 6-1,443 ft". In Fiji, it is "abundantly naturalized at elevations from near sea level to 1,968 ft in lawns, waste places, and villages, on grassy hillsides, and along roadsides and forest tracks". It is "common in lawns and other disturbed places".

Adaptation

The NRCS Field Office Technical Guide for Hawaii indicates that threeflower ticktrefoil is adapted to a soil pH range of 4.5 to 7.0, an elevation range of 0 to 2,500 ft, and requires at least 60 inches of annual rainfall. Other sources describe threeflower ticktrefoil as drought resistant but will not tolerate extended dry periods. Threeflower ticktrefoil exhibits fair to moderate shade tolerance.

Establishment

Threeflower ticktrefoil can be propagated by seed and stolons. The NRCS Field Office Technical Guide for Hawaii indicates that threeflower ticktrefoil seed should be inoculated with the cowpea inoculant group. The recommended seeding rate when planting threeflower ticktrefoil as a cover crop for orchards is 20 lb of pure live seed per acre; the recommended stolon planting rate is 40 to 80 bushels per acre. Threeflower ticktrefoil's rate of establishment is described as medium.

Management

The NRCS Field Office Technical Guide for Hawaii indicates that threeflower ticktrefoil stands require a low amount of maintenance. Threeflower ticktrefoil is persistent and resistant to heavy grazing.

Environmental Concerns

The southern green stink bug (*Nezara viridula*) is a serious pest of agriculture worldwide and one of the most serious pests of macadamia nuts in Hawaii. Threeflower ticktrefoil serves as a host for the southern green stink bug. Also, threeflower ticktrefoil is a host for the soybean rust (*Phakopsora pachyrhizi*).

Seeds and Plant Production

No information

Cultivars, Improved, and Selected Materials (and area of origin)

Contact your local Natural Resources Conservation Service (formerly Soil Conservation Service) office for more information. Look in the phone book under "United States Government." The Natural Resources Conservation Service will be listed under the subheading "Department of Agriculture."

Control

The effect of aerial applications of ocean salt water on the percentage cover of native plant species was evaluated at Kalaupapa National Historic Park in Hawaii. The study site contained the native plants: tropical fimbry (*Fimbristylis cymosa*), yellow ilima (*Sida fallax*), dune tetramolopium (*Tetramolopium rockii* var. *rockii*); non-native plants: southern crabgrass (*Digitaria ciliaris*) and threeflower ticktrefoil. Weekly applications for 18 weeks of either 2 or 4 gal salt water m² decreased the percentage cover of non-native plants.

Please contact your local agricultural extension specialist or county weed specialist to learn what works best in your area and how to use it safely. Always read label and safety instructions for each control method. Trade names and control measures appear in this document only to provide specific information. USDA, NRCS does not guarantee or warranty the products and control methods named, and other products may be equally effective.

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Read about Civil Rights at the Natural Resources Conservation Service.

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For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS Web site <<http://plants.usda.gov>> or the Plant Materials Program Web site <<http://Plant-Materials.nrcs.usda.gov>>

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